REMARKS:

Claims 91-149 are in the case and presented for reconsideration.

Claims 91, 92, 104, 105 and 107 have been amended to try and overcome the examiner's rejections under 35 U.S.C. 112, second paragraph for using the permissive "may be" phase. The information at the two interfaces of the type of double information carrier claimed still may or may not actually carry information at any particular time, but need only be capable of containing (storing) information which can be read. This is meant to cover both prerecorded carriers, such as data or audio CDs, and unrecorded blanks, which, however can be recorded at some future point.

While the amendments were made to satisfy the statutory requirement of 35 U.S.C. 112, second paragraph, they were not made to overcome any prior art and are not believed to limit the scope of the amended claims in any way, particularly in any way that would prevent a far application of the doctrine of equivalents in case an infringer makes insubstantial changes in a method for the purpose of avoiding literal infringement.

Claims 91 and 92 have been rejected as being fully anticipated by the European application EP 0 473 492 to Tawara et al.

Claim 91 claims the production of a structure as is schematically shown in Fig. 1 and especially including the intermediate layer 1. As disclosed on page 4 of the specification,

the optically effective layer of the intermediate layer must simultaneously fulfill a multitude of requirements.

In contrast to the present invention as claimed in claim 91, Tawara teaches a magneto-optical recording medium which has only one solid material interface, at which information is or may be applied, which is formed in fact by the magnetic layer 3 of Tawara. The layer 6, which is addressed by the examiner, is a protective outside-covering layer.

The optically effective layer of the intermediate layer of claim 91 must provide together with a further material at one of the solid material interfaces (see Figs. 1, 3) a reflection, that is as high as possible. This means that the intermediate layer with its optically effective layer must be capable of "transmitting said radiation" (claim 91, line 8).

The covering layer 6 of Tawara makes no contribution. The optically effective layer as claimed shall simultaneously have a transmission as high as possible. It is quite significant that on page 4 of the specification the description for the optically effective layer it is requested to use a material, which is normally used as covering layer material, thus, e.g., a material of a covering layer as of Tawara.

According to the present invention, the optically effective intermediate layer must further well adhere on one side to common plastic substrate material of the information carrier, and on the

other side to a common interface-forming material, such as, e.g., to a lacquer.

Just from comparing the structure taught by Tawara with the structure as claimed in claim 91 and in view of the significantly different requirements which must be fulfilled for the layer as addressed in claim 91 with respect to Tawara's covering layer 6, is clearly not obvious to recognize that a material proposed in Tawara as covering layer material, namely, silicon nitride, <u>deposited as claimed</u>, would fulfill the much harder requirement of the inventively provided part of the intermediate layer.

The same arguments hold with respect to claim 92 in view of Tawara. Additionally and with an eye on claim 92, Tawara clearly does not obviate the trimming of the refractive index as claimed and thus of the optical characteristics of such layer in view of highest possible reflection and transmission as is necessary for the multiple information interface structure of the present invention. The covering layer of Tawara is not the same structure nor made in the same way. Thus, Tawara's covering layer 6 would not anticipate or obviate claims 91 or 92 in view of the fact that it was one of the objects of the present invention to use as material for the part of the intermediate layer, a material as commonly used for covering layers.

Claim 91 is further rejected as unpatentable over Tawara in view of the U.S. patent to Kim. As has been outlined above, the

part of the intermediate layer deposited as claimed in claim 91 must fulfill critical optical requirements and mechanical requirements. Claim 91 clearly specifies which kind of deposition must be used to achieve this goal, namely, freeing solid silicon and reacting it with nitrogen containing gas. This is to fulfill the mechanical (adherence) and optical (transmission and reflection) requirements for such a layer in double-information interface structures.

As Tawara merely teaches a covering layer 6, even if, e.g., by Kim, it was known to sputter-deposit silicon nitride by freeing solid silicon and reacting in a nitrogen atmosphere, this would not make it obvious to select such deposition technique for depositing the part of the intermediate layer of the claimed structure to be produced. Kim (col. 2, line 3) again addresses a <u>protective layer</u>, and not an intermediate layer part as claimed. The combined references are more similar to each other than to the claimed invention in this regard.

Claims 95, 98 and 100 are dependent from respective claims 91 or 92, which are considered, as outlined above, inventive as well. The added reference to Kugler (U.S. Patent 5,292,417) discloses additional process techniques, but cannot supplement Tawara and Kim to the extent needed to render these claims obvious.

The same is valid for cliams 96 and 97, which was rejected as obvious from the combination of Tawara, Kim, Kugler and EP 0 564

789 to Signer.

Independent claim 92 is further considered unpatentable over Tawara in view of Takurou or the IBM Disclosure. As the examiner mentions, Takurou's object is to manufacture films whose electric characteristics can be controlled over a wide range. In view of the method as claimed in claim 92 where, as explained, it is of utmost importance to properly tailor adherence and optical characteristics, it would clearly have been unobvious to seek a solution for proper trimming in a technique in a document, where the electrical characteristics of a layer are addressed and trimmed. Thus, only in an ex post consideration, i.e., knowing the teachning of claim 92, one may recognize in Takurou that apparently for trimming electrical characteristics reactive gas mixture for silicon compound layer deposition is adjusted.

Further, Takurou discusses SiCH, and not as claimed in claim 92 SiNH. The same is true for the IBM Technical Disclosure. The mere fact that it was generally known to trim characteristics of a sputter-deposited silicon compound layer, either for thermal behavior or for electrical behavior or possibly even for optical behavior, would not obviate, for the specific intermediate layer part as claimed, to accurately trim the optical and adherence characteristics, i.e., all the complex requirements of such intermediate layer part as claimed.

In paragraph 13 of the office action, independent claim 107

and the claims dependent therefrom are rejected as obvious over EP 0 658 885 to Imaino. This reference teaches an optical information carrier with multiple data surfaces. A multitude of substrates is provided, which are separated mutually by air spaces. At the substrate surfaces adjacent to such air spaces, the data carrier surfaces are provided. They are coated with thin coatings of a semiconductor material such as amorphous silicon. The thickness of these layers is selected so that optical detectors receive from each of the data surfaces the same amount of light. To do so, they have an index of refraction which is relatively high and an extinction coefficient, which is relatively low. By adjusting their respective thicknesses, the reflection, transmission and absorption at the respective thin layers is adjusted.

The structure of Imaino is completely different from that claimed in claim 107. This is primarily due to the multiple substrate, multiple air space structure. The embodiment of Imaino, Fig. 2b, has members 122 of transmissive optical cement (lacquer), which also serves to hold the substrates together. Fig. 3a shows a layer 124, which is film-coated and has a thickness of 25 to 5000 Å upon the data surface.

After citing various passages and figures of this reference, however, the examiner concludes that Imaino does not discuss wavelength with respect to optical thickness. According to claim 107, the intermediate layer has a layer system with one or more

than one dielectric layer with a respective $\lambda_0/4$ thickness and therefore is based on an interference layer stack. The prior art does not suggest claim 107 and the claims dependent therefrom since they do not teach this important feature of claim 107. Moreover, claim 107 requires that in spite of providing layer thicknesses based on interference layer stack theory, the thickness of such layers is <u>not</u> critical in the addressed range of 0.6 to 0.2 (see also granted U.S. patent 5,965,228), which creates interference layer stacks that are thinner than would be expected in theory.

Accordingly, claims 107-149 are believed patentable over the prior art.

The prior art taken separately or in any combination is believed to be insufficient to teach the claimed invention. By this amendment, thus, the application and claims are beleived to be in condition for allowance and favorable action is respectfully requested.

The undersigned plans on calling the examiner in early August,

2002, to discuss the case further in an effort to reach agreement on allowable claims in case, after considering the foregoing, the examiner still feels the claims are not allowable.

Dated: July 16, 2002

Respectfully submitted,

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attach #9

~~Commissioner is also hereby authorized to charge or credit Deposit Account No. 14-1431 for any additional fees which may be due under 37 C.F.R. 1.17 or for any over payment.~~

~~In response to the Action dated April 26, 2001, please amend the above-identified application, as follows:~~

Version with markings to show changes made
U.S. Appln No. 09/362,397

~~**IN THE CLAIMS:**~~

~~Cancel Claims 54-66, 76, 77 and 81-89 (all the claims formerly presented - claim 90 also having been presented and canceled previously) and add the following new set of claims:~~

(Amended)

--91. A method for producing an information carrier adapted to comprising at least two solid material interfaces ~~at which information is or may be applied~~ contain information and whereat the information is stored by local modulation of at least one solid material characteristic, from which characteristic reflection of electromagnetic radiation depends at said interface, further comprising at least one intermediate layer between said two solid material interfaces, said at least one intermediate layer transmitting said radiation, said information being readable from at ~~a~~ least one of said solid material interfaces by means of radiation of predetermined wavelength, the method comprising the step of:

depositing in said intermediate layer at least one layer at

least predominantly comprising Si_vN_w by means of a reactive vacuum coating process, comprising the step of freeing Si from a solid body into a process atmosphere with a reactive gas containing N.

(Amended)

92. A method for producing an information carrier comprising at least two solid material interfaces ~~at which~~ adapted to contain information ~~is or may be applied~~ and whereat the information is stored by local modulation of at least one solid material characteristic, from which characteristic reflection of electro-magnetic radiation depends at said interface, further comprising at least one intermediate layer between said two solid material interfaces, said at least one intermediate layer transmitting said radiation, said information being readable from a least one of said solid material interfaces by means of radiation of predetermined wavelength, the method comprising the step of:

depositing in said intermediate layer at least one layer at least predominantly comprising $Si_vN_wH_u$ by means of a reactive vacuum coating process in a process atmosphere, an optimum of transmission of said layer and of a refractive index of the material of said layer being achieved by adjusting the concentration of a reactive gas in the process atmosphere, which reactive gas comprises N and H.

98. The method according to claim 91 or 92, comprising one of reactive sputtering and of ion plating for said reactive vacuum coating.

99. The method according to claim 98, wherein said sputtering is performed by magnetron sputtering.

100. The method according to claim 91 or 92, wherein a target of negative or positive doped silicon is one of reactively sputtered, ion plated and reactive magnetron sputtered.

101. The method according to claim 91 or 92, wherein the reactive gas is hydronitrogen and is fed to said process atmosphere.

102. The method according to claim 91 or 92, wherein the reactive gas is Ammonia.

103. The method according to claim 91 or 92, wherein the reactive gas includes Nitrogen.

(Amended)

104. The method according to claim 91 or 92, wherein said layer is produced as a layer of an intermediate layer between two solid material interfaces of an information carrier, at which interfaces information is ~~or may be~~ adapted to be applied, and whereat the

information is stored by local modulation of at least one solid material characteristic, from which characteristic reflection of electromagnetic radiation depends at said interfaces.

(Amended)

105. (A) The method according to claim 91 or 92, wherein said layer is produced at an information carrier as an intermediate layer between two solid material interfaces, which intermediate layer comprises a dielectric layer system with at least one layer, at which interfaces information is adapted to be ~~or may be~~ applied and whereat the information is stored by local modulation of at least one solid material characteristic, from which characteristic reflection of electromagnetic radiation depends at said interfaces, wherein said layer system has an optical thickness which, at least in a first approximation, is $m \cdot \lambda_o/4$, wherein m is integer and at least unity and is uneven and wherein λ_o designated the wavelength of said radiation which is transmitted through said at least one dielectric layer of said dielectric layer system.

~~106. A method according to claim 91 or 92, wherein the method includes applying a silver layer between one of the solid material interfaces and the intermediate layer.~~

(Amended)

107. (A) A method for producing an information carrier, comprising at least two solid material interfaces adapted to contain ~~at which~~ information ~~is or~~

~~may be applied~~ and whereat the information is stored by local modulation of at least one solid material characteristic, from which characteristic reflection of electromagnetic radiation depends at said interface, further comprising at least one intermediate layer between said two solid material interfaces, said at least one intermediate layer transmitting said radiation, said information being readable from a least one of said solid material interfaces by means of radiation of predetermined wavelength, the method comprising the step of:

depositing the intermediate layer to have a layer system with at least one dielectric layer and with an optical thickness which, at least in a first approximation, is $m.\lambda_o/4$, wherein m is an integer of at least unity and is uneven and wherein λ_o designates the wavelength of said radiation which is transmitted through said at least one dielectric layer and wherein, depending from said m being an integer, m being ~~may be~~ reduced by an amount of up to 0.6 or increased by an amount of up to 0.2.

108. A method according to claim 107, including depositing the intermediate layer so that the electromagnetic radiation for either applying or reading information has a wavelength within the band of $400nm \le \lambda_s \le 800nm$.

109. A method according to claim 107, wherein at least one of the